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Atherosclerosis and immunity: A perspective☆

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ABSTRACT

Atherosclerosis is an inflammatory and multifaceted disorder resulting from the accumulation of lipid droplets and several types of immune cells, including macrophages, T and B lymphocytes in the arterial walls. A wide variety of macrophage subtypes with different functions is implicated in the development and progression of atherosclerotic lesions. The prevalence of specific macrophage subtypes, which is influenced by cytokines, mediators, and substances composing atherosclerotic lesions, has been suggested to be an appropriate indicator of transition from a stable to an unstable plaque phenotype. Thus, a better understanding of the mechanisms underlying the differentiation of macrophage subpopulations in relation to the plaque phenotype would help to develop novel approaches aiming at slowing-down the progression of atherosclerotic disease by modulating the polarization of these cells. In addition, many arms of the adaptative immune system, which are regulated by different subtypes of T and B lymphocytes, are involved in atherosclerosis progression and there is an increasing effort to identify immune-modulating therapies targeting either T or B cells with a potential anti-atherosclerotic impact. This paper summarizes the pathophysiology of atherosclerotic disease as it relates to the contribution from the immune system, reviewing the crucial role of macrophages, T and B lymphocytes.